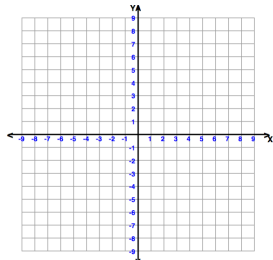


## 7.2

### 7.2 Areas Between Curves

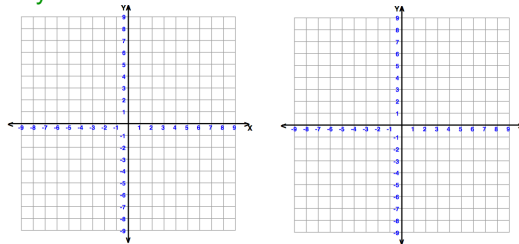
Consider the region bound by  $f(x) = 6 - x$  and  $g(x) = x^2$

Graph the region:



How would you find the area of the region?

Why would that work?



Write a rule:

What are the conditions? What do you have to watch out for?

What do you do in these cases?

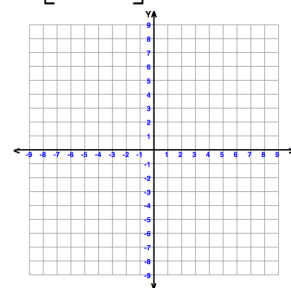
RS #37  $(f(x) - g(x))dx$   $f(x) > g(x)$

Tips to finding enclosed areas:

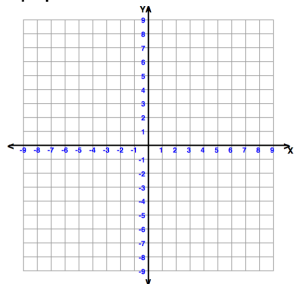
- 1- Know what the graphs look like (graph them if you have to)  
(intercepts, symmetry, which curve is greater)
- 2- Symmetry is your friend- if you use it right.
- 3- Become familiar with integrating with respect to  $y$ .
- 4- Remember the *appropriate* role of your calculator

Find the area of the region enclosed by the curves.

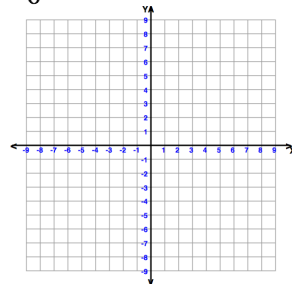
1.  $y = \sin x$ ,  $y = \cos x$  over  $\left[\frac{\pi}{4}, \frac{5\pi}{4}\right]$



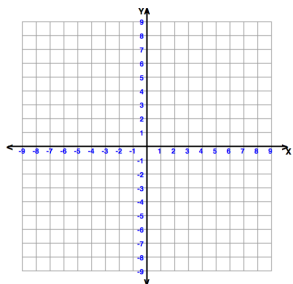
2.  $f(x) = x^2$ ,  $g(x) = -x^2 + 4$



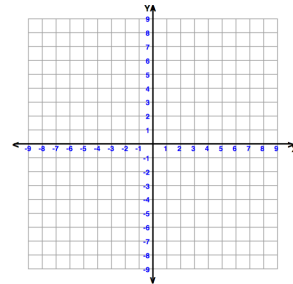
3.  $y = \sqrt{x}$ ,  $y = x - 2$ ,  $y = 0$



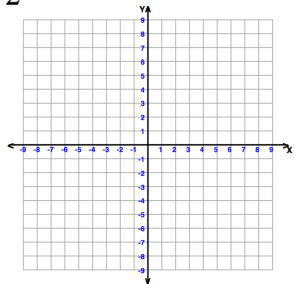
4.  $y = 2x - x^2$ ,  $y = -3$



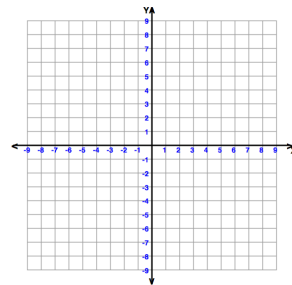
5.  $y = x^3$ ,  $x = y^2$



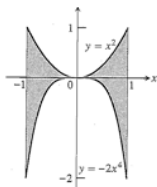
6.  $x + y^2 = 0$ ,  $x + 3y^2 = 2$



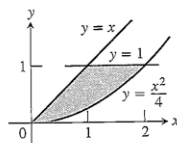
7.  $y = x^2$ ,  $y = x^4$



8.



9.



7.2

10.

